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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,867	06/26/2003	Joseph A. Fisher	10011522-1	9851

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EXAMINER

STEELMAN, MARY J

ART UNIT	PAPER NUMBER
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2191

DATE MAILED: 06/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/606,867	Applicant(s) FISHER ET AL.	
	Examiner Mary J. Steelman	Art Unit 2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/26/03, 3/25/04, 1/3/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/25/04, 1/3/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-30 are pending.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

FIG. 5, #520 is not mentioned in the Specification. See page 27, line 14.

3. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “**Replacement Sheet**” or “**New Sheet**” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 28-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 28 recites the limitation "the number of very long instruction words" in line 5.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-27 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent

Application Publication 2004 / 0163077A1 to Dimpsey et al.

Per claim 1:

A method for facilitating profiling of an application, comprising:

-intercepting application instructions immediately before their execution;

Dimpsey: [0071]-“Trace records may be produced by the execution of small pieces of code called hooks. Hooks may be inserted...including statically and dynamically...”

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-determining if an application instruction is a frequently used instruction according to a pre-established policy;

Dimpsey: [0013], [0090-0091], "A hot spot method or routine is first identified and instrumented..."

-only if the application instruction is a frequently used instruction, instrumenting the application instruction so as to facilitate collection of information about execution of the application instruction.

Dimpsey: [0014]-hot spot is dynamically instrumented so that the next time the calling method is executed the dynamically inserted hooks are executed...to get an understanding of the caller method's characteristics."

Per claim 2:

-the intercepted application instructions are application binaries.

Dimpsey: [0126]-hot spot method code is native (binaries)

Per claim 3:

-determining if an application instruction is a frequently used instruction comprises consulting a program counter associated with the application instruction.

Dimpsey: [0093]-count for each tick at the address is incremented....a count of occurrences at those addresses is maintained.

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Per claim 4:

-wherein instrumenting the application instruction comprises instrumenting the application instruction to collect information as to the fact that the application instruction was executed.

Dimpsey: [0093]-count for each tick at the address is incremented....a count of occurrences at those addresses is maintained.

Per claim 5:

-wherein instrumenting the application instruction comprises instrumenting the application instruction to collect information as to what other application instruction called the intercepted application instruction.

Dimpsey: [0080]-stack unwind option...By walking back up the call stack, a complete call stack can be obtained for analysis. See FIG. 8.

Per claim 6:

-wherein instrumenting the application instruction comprises instrumenting the application instruction to collect information as to what application instructions the intercepted application instruction calls.

Dempsey: [0080]-See call tree as noted in claim 5 above.

Per claim 7:

-wherein instrumenting the application instruction comprises instrumenting the application

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instruction to increment a counter representing a number of processor cycles or a counter representing the number of instructions executed.

Dempsey: [0084]-program counter value, [0093]-program counter sampling is performed....a count of occurrences at those addresses is maintained.

Per claim 8:

-recording information as to the execution of the intercepted application instructions.

Dempsey: [0069]-method being interpreted may be placed in the trace record, [0077]-A trace record is then written.

Per claim 9:

-wherein recording information comprises recording information as to the execution of code stored in a shared library that the application accesses.

Dempsey: [0064]-“An initialization phase is used to capture the state of the client machine...This trace initialization data includes trace records...Records from trace data captured from hooks are written to indicate thread switches, interrupts, and loading and unloading of classes and jitted methods...”

Per claim 10:

-determining if code associated with the application instructions has been cached.

Dempsey: [0050] & [0064]- Invention recognizes ‘jitted’ code (translated into native & cached).

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Per claim 11:

-executing the cached code in lieu of the intercepted application instructions if associated code has been cached.

Dimpsey: [0064]- Execute 'jitted' code.

Per claim 12:

A system for facilitating profiling of an application, comprising:

- means for intercepting application instructions before they are executed;
- means for determining if an application instructions are used frequently;
- means for instrumenting frequently used application instructions to facilitate collection of information about execution of the application instructions.

This is a 'system' version of claim 1 above. See rejection of limitations as noted in claim 1 above.

Per claim 13:

- means for determining if an application instruction is a frequently used instruction comprise means for counting the number of times the application instruction is executed.

Dimpsey: [0093]-frequency count

Per claim 14:

- means for instrumenting the application instruction comprise means for instrumenting the application instruction to collect information as to at least one of the fact that the application

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instruction was executed, what other application instruction called the intercepted application instruction, and other application instructions the intercepted application instruction calls.

Dimpsey: [0093] and see call tree disclosed at [0090-0089] and FIGs. 8 & 10.

Per claim 15:

-means for instrumenting the application instruction comprise means for instrumenting the application instruction to increment a counter representing a number of processor cycles.

See rejection of limitations as addressed in claim 7 above.

Per claim 16:

-means for recording information as to the execution of the intercepted application instructions.

See rejection of limitations as addressed in claim 8 above.

Per claim 17:

A program that facilitates profiling of an application and that is stored on a computer-readable medium, the program comprising:

-logic configured to intercept application binaries; logic configured to determine if an application instruction is a frequently used instruction;

-logic configured to instrument the application instructions that are determined to be frequently used instructions so as to facilitate collection of information about execution of the application instruction.

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This is a 'program...stored on a computer readable medium' version of claim 1 above. See rejection of limitations in claim 1. Also see [0129]-computer readable medium.

Per claim 18:

-the logic configured to determine if an application instruction is a frequently used instruction comprises logic configured to count the number of times the application instruction is executed.

Dimpsey: [0093]-a count of occurrences.

Per claim 19:

- the logic configured to instrument the application instruction comprises logic configured to instrument the application instruction to collect information as to at least one of the fact that the application instruction was executed, what other application instruction called the intercepted application instruction, and other application instructions the intercepted application instruction calls.

Dimpsey: See [0093] and call tree disclosed at [0090-0089] and FIGs. 8 & 10.

Per claim 20:

-the logic configured to instrument the application instruction comprises logic configured to instrument the application instruction to increment a counter representing a number of processor cycles.

Dimpsey: [0093]-program counter sampling.

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Per claim 21:

-logic configured to record information as to the execution of the intercepted application instructions.

See rejection of limitations as addressed in claim 8 above.

Per claim 22:

A method for facilitating profiling of an application, comprising:

- intercepting application binaries prior to their execution;
- determining if associated code has been cached;
- executing the cached code if associated code has been cached;
- recording information about the execution of the application binaries if associated code has not been cached;
- instrumenting the application binaries if they are determined to be frequently executed binaries;
- caching code associated with the application binaries that includes instrumentation.

Dimpsey: See rejection of limitations addressed in claims 1, 10, and 11 above.

Per claim 23:

-instrumenting the application binaries comprises instrumenting the application binaries to collect information as to the fact that the application binaries were executed.

Dimpsey: [0107]

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Per claim 24:

-instrumenting the application binaries comprises instrumenting the application binaries to collect information as to what other application binaries called the intercepted application binaries.

Dimpsey: [0104]

Per claim 25:

-instrumenting the application binaries comprises instrumenting the application binaries to collect information as to other application binaries the intercepted application binaries call.

Dimpsey: [0122]

Per claim 26:

-instrumenting the application binaries comprises instrumenting the application binaries to increment a counter representing a number of processor cycles.

See rejection of claims 7 & 15 above.

Per claim 27:

-recording information comprises recording information as to the execution of code stored in a shared library that the application accesses.

Dimpsey: [0071-0072], See FIG. 4, trace program stores in a buffer and contents are sent to a file for post-processing.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent Application Publication 2004/0163077 to Dimpsey et al., in view of USPN 6,178,492 B1 to Matsuo .

Per claim 28:

Dimpsey disclosed:

A method for facilitating profiling of an application, comprising:

- intercepting application code fragments prior to their execution;
- determining if code associated with the fragments has been cached;
- executing the cached code if associated code has been cached;

See rejection of claims 1, 10 and 11 above.

Dimpsey failed to disclose:

- determining the number of very long instruction words (VLIWs) being executed for each code fragment;

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- instrumenting the application code fragments if they are determined to be frequently executed fragments;

- caching code associated with the code fragments that includes instrumentation.

However, Matsuo disclosed tracing superscalar (VLIW) instructions, determining execution frequency in order to improve processing. Matsuo disclosed providing trace / debug support at col. 22, lines 15-30. Matsuo disclosed VLIWs at col. 35, lines 1-6, "The data processor 1 decodes the instruction having a high execution frequency in parallel with the preceding instruction to perform two-instruction superscalar processing executing both the instructions in parallel."

Therefore, it would have been obvious, to one of ordinary skill in the art at the time of the invention to modify a superscalar (VLIW) instruction set, after determining frequently accessed instructions because one of ordinary skill would be motivated to improve program optimization by better understanding caller/callee characteristics (Dimpsey-[0014]).

Per claim 29:

- instrumenting the code fragments comprises instrumenting the fragments to collect information as to the fact that the fragments were executed.

See rejection of limitations as addressed in claim 4 above.

Per claim 30:

- instrumenting the code fragments comprises instrumenting the fragments to increment a counter representing a number of processor cycles.

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See rejection of limitations as addressed in claim 7 above.

Conclusion

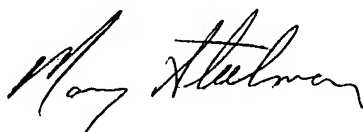
10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Steelman, whose telephone number is (571) 272-3704. The examiner can normally be reached Monday through Thursday, from 7:00 AM to 5:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Zhen can be reached at (571) 272-3708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mary Steelman



06/05/2006